

**IMPACT OF ENFORCEMENT AND CO-MANAGEMENT
ACTIVITY ON COMPLIANCE BEHAVIOR OF FISHERMEN IN
PENINSULAR MALAYSIA**

**A Thesis submitted to the Graduate School in full fulfillment of the
Requirements for the degree of Doctor of Philosophy,
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in

Resource Economics

by

Jamal b. Ali

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ABSTRAK

Model ekonomi dalam mengkaji gelagat kepatuhan dalam peraturan perikanan biasanya mengandaikan keputusan untuk mematuhi atau melanggar peraturan perikanan sangat bergantung kepada jangkaan kos dan keuntungan kewangan. Di atas alasan tersebut, pegawai penguatkuasa kebiasaannya akan menumpukan kepada kebangkalian ditahan dan denda dikenakan sebagai alat mengawal tindakan perlanggaran peraturan. Walau bagaimanapun meningkatkan kuantiti dan kualiti aktiviti pencegahan melibatkan kos yang tinggi. Dengan demikian, meningkatkan kebangkalian ditahan dan denda, walau pun mudah dilaksanakan, bukan merupakan tindakan yang baik. Agensi penguatkuasa telah merancang pendekatan yang baru dalam usaha memperbaiki sumber perikanan dan menggalakkan kepatuhan terhadap peraturan perikanan tanpa perlu melibatkan sumber terhad yang banyak. Dalam hal ini, pengurusan perikanan secara kerjasama dengan nelayan (co-management) telah menjadi alat polisi yang penting. Tujuan thesis ini ialah untuk mengkaji faktor-faktor yang mempengaruhi gelagat kepatuhan terhadap peraturan zon tangkapan di kalangan nelayan pukot tunda, pukot jerut, dan pukot hanyut di Semenanjung Malaysia.

Peningkatan perlanggaran peraturan memberi kesan kepada permintaan terhadap perlindungan, dan seterusnya peningkatan perbelanjaan terhadap penguatkuasaan undang-undang. Pembuat polisi mempunyai dua pilihan: pilihan pertama menumpukan kepada meningkatkan keupayaan kakitangan untuk

memperbaiki keadaan ketidakpatuhan, atau pilihan kedua, kombinasi meningkatkan keupayaan dan pada masa yang sama meningkatkan komitmen di kalangan nelayan untuk mematuhi peraturan. Model ekonometrik logit digunakan untuk menganalisis gelagat kepatuhan sampel 284 nelayan di Semenanjung Malaysia. Nelayan yang dikaji menunjukkan di samping kebangkalian dikesan dan denda, faktor-faktor lain seperti keuntungan dari aktiviti haram, kawasan penangkapan dan aktiviti pengurusan secara kerjasama komuniti (co-management) juga mempengaruhi gelagat kepatuhan. Keputusan dari analisis empirikal membuktikan hubungan kaedah pencegahan dan pengurusan secara kerjasama (co-management) kepada kepatuhan dalam peraturan perikanan. Penemuan menunjukkan aktiviti pengurusan secara kerjasama (co-management) boleh digunakan sebagai pelengkap strategi pencegahan dalam pengurusan sumber perikanan di Semenanjung Malaysia.

ABSTRACT

Economic models of regulatory compliance in fisheries usually assume the decision to comply or to violate fisheries regulations depends primarily on expected monetary costs and benefits. Enforcement agencies tend, as a result, to focus only on increasing probability of detection and penalty severity as a tool to control violations. However, increasing the quantity of monitoring activities and improving the quality of these activities may prove to be very costly; while raising probability of detection and fines, it may not be the best strategy. Enforcement agencies have tried to develop innovative approaches in order to improve fishery resources and induce compliance with fishery regulations without necessarily engaging a larger amount of (scarce) resources to achieve this objective. To this extent, co-management activities have become an important policy tool. The purpose of this thesis was to examine the factors affecting compliance behavior with regard to zoning regulation among trawler, purse seine and drift net fishermen in thirteen fishing areas of Peninsular Malaysia. Frequent violations of regulation will impact on the demand for protection, and therefore lead to greater expenditure on law enforcement. Policy makers who want to improve compliance face two choices: the first choice is whether to focus only on building staff capacity to detect and correct non-compliance, or the second choice a combination of strategies building staff capacity and at the same time building commitment among fishermen so that they will comply with regulations. Logit econometric model was used to estimate the dichotomous violation decision of 284 Peninsular Malaysia fishermen. Data from the surveyed fishermen showed that,

besides probability of detection and penalty severity, factors such as illegal gain, fishing areas and co-management activities could also influence compliance behavior. The results of the empirical analysis provided evidence of the relationship between deterrence and co-management strategies on the one hand, and compliance on the other. These findings imply that co-management activities should be strengthened to complement the deterrence strategies in the management of fishery resources in Peninsular Malaysia.

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ABBREVIATIONS

CPR	Common-Property Resources
DOF	Department of Fisheries
EEZ	Exclusive Economic Zone
FA	Fishermen's Association
FAO	Food and Agriculture Organization
FEG	Fisheries Economic Groups
GDP	Gross Domestic Product
MEY	Maximum Economic Yield
MSY	Maximum Sustainable Yield
MIER	Malaysian Institute of Economic Research
NGO	Non-Government Organization
VTMS	Vessel Tracking and Monitoring System

CHAPTER 1

INTRODUCTION

1.1 Background

Over-fishing and declining marine fish landings, especially along the West Coast of Peninsular Malaysia are two important issues in Malaysia. According to Department of Fisheries Malaysia (DOF), this stagnation or decline in coastal fisheries production is expected to continue as the maximum sustainable yield has been reached (DOF 1997). This is of great concern to economists, as the fisheries sector in 2000 contributed 1.6 percent to Gross Domestic Product (GDP) and employed 81,994 fishermen (DOF 2002).

Like in most countries, the fishery industry of Malaysia is an open-access resource, which means fishing is open to any new entrant. Even though the fishermen may be well aware of catching less fish today, they are also aware that any future catch may be large enough to make it worthwhile to ‘invest in the stock’. They also know that any curtailment of their current catch simply results in an increased catch for someone else. As a result, fishermen may try to “harvest” what they can, when they can, before anyone else catches it.

With the introduction of more progressive and efficient fishing techniques, as has been witnessed over the past decade or so, the need for stock management policies has become more and more acute. New technology means that fishing is no longer limited by the captain’s skills and the crew’s strength. A fishing vessel can

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